S. Ouaro
Laboratoire d'Analyse Mathématique des Equations, Institut des Sciences Exactes et Appliquées, Université de Ouagadougou, 03 BP 7021 Ouaga 03, Ouagadougou, Burkina Faso
`souaro@univ-ouaga.bf`

S. Traore
Laboratoire d'Analyse Mathématique des Equations, Institut des Sciences Exactes et Appliquées, Université de Bobo Dioulasso, 01 BP 1091, Bobo-Dioulasso 01, Burkina Faso
`sado@univ-ouaga.bf`

Weak and Entropy Solutions to Nonlinear Elliptic Problems with Variable Exponent

We study the boundary value problem $-div(a(x, \nabla u)) = f(x, u)$ in Ω, $u = 0$ on $\partial\Omega$, where Ω is a smooth bounded domain in $\mathbb{R}^N$ and $div(a(x, \nabla u))$ is a $p(x)$-Laplace type operator. We obtain the existence and uniqueness of an entropy solution for L^1-data f independent of u, the existence of weak energy solution for general data f dependent of u where the variable exponent $p(.)$ is not necessarily continuous.

Keywords: Generalized Lebesgue-Sobolev spaces, weak energy solution, entropy solution, p(x)-Laplace operator, electrorheological fluids.